

### REMARKS

This document is submitted in reply to the final Office Action dated May 27, 2008 ("Office Action").

Initially, Applicants would like to thank the Examiner for granting a telephone interview with Applicants' counsel held on July 16, 2008. Applicants would also like to thank the Supervisory Examiner for conducting another telephone interview with Applicants' counsel on July 17, 2008 to further discuss this application. A summary of both interviews is provided below.

Applicants have amended claims 1, 3, 5, 10, 11, 15, 20, 27, and 31 to more particularly and distinctly point out the subject matter that they deem as their invention and amended claim 28 to promote clarity. Support for the amendments can be found in the specification at page 3, lines 3-7. These amendments have necessitated cancellation of claims 4, 8, 9, 13, 14, 18, 19, 21, 22, and 24-26. Note that claims 2, 7, 12, 17, 23 were cancelled previously. Further, Applicants have added new claims 32-38, support for which appears in Examples 2 and 3 at page 3, lines 27 through page 5, line 9. No new matter has been introduced.

Upon entry of the present amendments, claims 1, 3, 5, 6, 10, 11, 15, 16, 20, and 27-38 will be pending. Among them, claims 11, 15, 16, and 20 have been withdrawn from consideration, and claims 1, 3, 5, 6, 10, and 27-38 will be examined.

Applicants respectfully request that the Examiner reconsider this application in view of the following remarks.

#### Interview Summary

On July 14, 2008, Applicants' counsel sent a letter via facsimile to the Examiner, outlining the issues and their positions to be discussed during the interview scheduled for July 16, 2008.

During the interview, Applicants' counsel, the Examiner, and the Supervisory Examiner discussed the indefiniteness and lack-of-written-description rejections of claims 1, 3-6, 8-10, and 27-31. Applicants' counsel first pointed out that, while the Examiner asserted the same ground to support both rejections, he actually rejected these

claims only for lack of written description. Applicants' counsel then presented evidence and arguments (presented in the above-mentioned letter) to rebut this rejection. After considering Applicants' position, both examiners agreed to withdraw both the indefiniteness and lack-of-written-description rejections. See the continuation sheet in the Interview Summary dated July 22, 2008, regarding the telephone interview held on July 16, 2008.

The obviousness rejection was also discussed during the interview and no agreement was reached. Applicants' counsel spoke to the Supervisory Examiner on July 17, 2008 to further discuss the obviousness issue. To accelerate prosecution, Applicants' counsel proposed to narrow the claims under examination by replacing the term "liquor waste" with "sorghum liquor waste." The Supervisory Examiner pointed out that the proposed amendment would overcome the obviousness rejection. See the continuation sheet in the Interview Summary dated July 22, 2008, regarding the telephone interview held on July 17, 2008.

Rejection under 35 U.S.C. § 112, First Paragraph (Written Description)

Claims 1, 3-6, 8-10, and 27-31 were rejected for lack of written description.<sup>1</sup> See the Office Action, pages 2-3. These claims, as previously presented, cover a composition containing a thermolabile protein admixed with **a dried liquor waste**.

The Examiner asserts that the specification does not adequately describe **a dried liquor waste** that serves as a component of the claimed composition. See the Office Action, pages 2-3, bridging paragraph. Applicants respectfully disagree.

During the telephone interview held on July 16, 2008, Applicants' counsel brought to the Examiner's attention two teachings in the specification, which are shown

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<sup>1</sup> The Examiner rejected these claims under 35 USC 112 first paragraph for lack of written description and under 35 USC 112, second paragraph for indefiniteness. See the Office Action, pages 2-3. During the telephone interview on July 16, 2008, Applicants' counsel pointed out, and both the Examiner and the Supervisory Examiner agreed, that given the Examiner's ground for rejection, he actually rejected these claims under 35 USC 112 only for lack of written description. Applicants address herein the rejected claims accordingly.

below, and argued that their combination provided **literal support** for “**a dried liquor waste**” as a component of the claimed composition:

- (1) “Also within the scope of this invention is a composition containing a thermolabile protein admixed with **a liquor waste**.” See page 1, lines 16-17; emphasis added.
- (2) “The liquor waste ... can be **dried** (e.g., at 60 °C for 24 h) and grounded and sieved (e.g., with a net of 0.64-cm mesh) before it is mixed with a protein solution.” See page 2, lines 1-3; emphasis added.

After considering Applicants’ argument, the Examiner agreed to withdraw this rejection. See the continuation sheet in the Interview Summary dated July 22, 2008, regarding the telephone interview held on July 16, 2008.

#### Rejection under 35 U.S.C. § 112, Second Paragraph

Claim 28 was rejected as indefinite on the ground that the term “net of 0.64-cm mesh” recited therein is vague” See the Office Action, page 3, fourth paragraph.

For the sole purpose of facilitating prosecution, Applicants have replaced the term at issue with “a net having a mesh size of 0.64-cm,” rendering moot the Examiner’s ground for rejection.

#### Rejection under 35 U.S.C. § 103

Claims 1, 3-6, 8-10, and 27-31 were rejected for obviousness over the primary reference Cole in view of the four secondary references, i.e., Boinot, Bass, Heikkila, and De Sa. Claims 4, 8, and 9 have been cancelled.

Applicants first discuss the teachings in the cited references:

- Cole teaches a method of protecting a fungal alpha amylase against thermal denaturation by mixing the amylase with a concentrated sugar solution, i.e., having a sugar concentration of at least 20% (w/v). See the abstract, and column 4, lines 59-62. **This reference does not mention at all liquor wastes.**

- Boinot teaches converting unfermentable sugar contained in vinasse (a liquor waste), to fermentable sugar by hydrolysis. See the title, and column 1, lines 1-4. The exemplary vinasses disclosed in this reference were prepared from **corn flour** and **maize flour**. See column 3, line 12, and column 4, line 19.
- Heikkilä teaches fractionating vinasse to obtain a fraction rich in sucrose. This reference is **silent as to the source of the vinasse and how it was prepared**.
- De Sa teaches a process for producing alcohol via distillation of fermented plant, including, among a number of others, **sorghum**. It further discloses that the waste generated in this process does not present the polluting effects of vinasse. See column 2, lines 57 through column 3, line 4.
- Bass teaches concentrating molasses fermentation residues to produced a dried product used as animal feed or fertilizer. This reference describes “molasses” as “a by-product of sugar manufacture from **sugar beet** and **sugar cane** ...” See column 1, lines 15-16. Accordingly, the molasses fermentation residues disclosed therein is **a waste derived from fermented sugar beet or sugar cane**.

The Examiner is of the position that, as the primary reference teaches use of sugar to protect an enzyme from thermal denaturation and certain secondary references teach that vinasse (a liquor waste) contains sugar, one skilled in the art would have been motivated to combine the teachings in these references, thereby arriving at the claimed invention, i.e., a composition containing a protein and a liquor waste. Applicants respectfully disagree.

Nonetheless, for the sole purpose of moving this application forward, Applicants have narrowed independent claim 1 by (1) replacing the term “liquor waste” recited therein with “sorghum liquor waste,” and (2) defining “sorghum liquor waste” as “the remains after two distillations of fermented sorghum.” As pointed out by the Supervisory Examiner during the telephone interview with Applicants’ counsel on July 17, 2008, the proposed amendments would overcome this obviousness rejection. See the continuation sheet in the Interview Summary dated July 22, 2008, regarding the telephone interview held on July 17, 2008.

For the record, Applicants address below why claim 1 is non-obvious in view of the five references.

Amended claim 1 covers a composition containing a thermolabile protein and a sorghum liquor waste. As defined in amended claim 1, **a sorghum liquor waste** is the remains **after two distillations** of fermented sorghum. Applicants submit that this claim is not obvious over the five cited references for at least two reasons.

First, as none of the five references teaches or suggests the **sorghum liquor waste** required by amended claim 1, their combination would not have arrived at the composition of this claim.

Among the five references, De Sa is the only reference that discloses a waste derived from processing fermented **sorghum**. The De Sa waste is prepared by a process including steps in addition to distillation. See column 2, line 57 to column 3, line 5. De Sa explicitly points out that the waste resulting from this process “**does not** present the polluting effects of vinasse.” As also pointed out in De Sa, vinasse, i.e., the remains after distillation, causes heavy pollution. See column 1, lines 19-55. The sorghum liquor waste required by amended claim 1 is the remains after two distillations of fermented sorghum. According to De Sa, it is a heavy pollutant. Thus, the sorghum liquor waste required by amended claim 1 is different from the De Sa sorghum waste. Namely, the former possesses polluting effects while the latter does not. As to the other four references, Cole is irrelevant to liquor wastes; Boinot and Bass describe liquor wastes prepared by corn/maize flour and sugar cane/beet, respectively; and Heikkilla is silent on the sources of the liquor wastes described therein. See the discussions at pages 8-9 above. Taken together, all of the five references do not teach or suggest the sorghum liquor waste required by amended claim 1.

Second, a skilled person in the art would not have been motivated to mix a protein with any liquor waste, e.g., the sorghum liquor waste required by amended claim 1.<sup>2</sup>

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<sup>2</sup> According to the Examiner, as sugar is commonly used to protect proteins from thermal denaturation, it would have been obvious to a skilled person in the art to mix a protein with any sugar-containing material, including a liquor waste, to achieve thermal protective effects. Applicants would like to point out that, for the reasons set forth below, the Examiner's position is factually incorrect.

A liquor waste comes from distillation of a fermented plant. Plant tissues are well known to contain various substances, e.g., phenolics and proteases, that degrade or inactivate proteins. See *Methods in Molecular Biology*, vol 59, Protein Purification Protocols, at page 23, edited by Shawn Doonan, Humana Press Inc (“Doonan”).<sup>3</sup> In view of this common knowledge, a skilled person in the art would have been discouraged from mixing a protein with a plant material without knowing whether the substances in it that degrade or inactivate proteins have been removed. As a liquor waste is distillation residues of a fermented plant, which has not been processed to remove the protein-degrading/inactivating substances mentioned above, a skilled person in the art would have expected that mixing a liquor waste with a protein to be protected would result in degradation or inactivation of that protein, rather than improvement of its thermal stability. Note that the common knowledge iterated in Doonan relates to all plants, including sorghum. In other words, a skilled artisan would have known that, like any other plant, sorghum also contains substances that degrade or inactivate proteins. Thus, he or she also would not have been motivated, in view of the common knowledge noted above, to extrapolate a sorghum liquor waste from any of the liquor wastes described in Boinot, Heikilla, and Bass, to mix it with a protein, thereby arriving at the composition of amended claim 1.

Also note that none of the five references suggests that a liquor waste, in particular, a sorghum liquor waste, is free from substances that either degrade or inactivate proteins. Thus, they do not negate the conclusion that a skilled person in the art would have been discouraged from mixing a sorghum liquor waste with a protein.

In sum, given the two reasons set forth above, Applicants submit that amended claim 1 is not rendered obvious by the five references. Nor are claims 3, 5, 6, 10, and 27-31, all of which depend from claim 1.

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<sup>3</sup> Applicants do not have access to this book; however, the page that iterates this common knowledge is available online at [http://books.google.com/books?id=3KyCcpjnnTAC&printsec=frontcover&source=gbv\\_summary\\_r&cad=0](http://books.google.com/books?id=3KyCcpjnnTAC&printsec=frontcover&source=gbv_summary_r&cad=0)

Note that Applicants have added new claims 32-38, all of which ultimately depend from amended claim 1. For the same reasons set forth above, Applicants submit that they are also not obvious over the five references.

#### Withdrawn Claims

Claims 11, 15, 16, and 20, directed to a method for preparing a composition containing a protein and a liquor waste, have been withdrawn from consideration for covering non-elected subject matter. These claims, as amended, include all limitations of certain claims currently under examination. Applicants would like to point out that, pursuant to MPEP § 821.04, these withdrawn claims would be entitled to rejoinder upon allowance of the claims being examined.

#### CONCLUSION

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment.

In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed.

Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.


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No fee is believed to be due. Please apply any charges to Deposit Account No.  
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Respectfully submitted,

  
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